

# PATENT COOPERATION TREATY

Patent Mail Received

From the INTERNATIONAL SEARCHING AUTHORITY

FEB 06 2007

# PCT

To:

DORSEY & WHITNEY LLP  
Attn. Abelev, Gary  
250 Park Avenue  
New York NY 10177  
ETATS-UNIS D'AMERIQUE

M274

NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL SEARCH REPORT AND  
THE WRITTEN OPINION OF THE INTERNATIONAL  
SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

Date of mailing  
(day/month/year)

05/02/2007

Applicant's or agent's file reference

186666/PCT

**FOR FURTHER ACTION**

See paragraphs 1 and 4 below

International application No.

PCT/US2006/031275

International filing date  
(day/month/year)

09/08/2006

Applicant

THE GENERAL HOSPITAL CORPORATION

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

**Filing of amendments and statement under Article 19:**

The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):

**When?** The time limit for filing such amendments is normally two months from the date of transmittal of the International Search Report.

**Where?** Directly to the International Bureau of WIPO, 34 chemin des Colombettes  
1211 Geneva 20, Switzerland, Facsimile No.: (41-22) 338.82.70

**For more detailed instructions,** see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.
3. ☐ **With regard to the protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

- ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.
- ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

**4. Reminders**

Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis.1 and 90bis.3, respectively, before the completion of the technical preparations for international publication.

The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

**DOCKETED**

Name and mailing address of the International Searching Authority



European Patent Office, P.B. 5818 Patentlaan 2  
NL-2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Chrissanthi Chouloulidou

## NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the *PCT Applicant's Guide*, a publication of WIPO.

In these Notes, "Article", "Rule", and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions, respectively.

### INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report and the written opinion of the International Searching Authority, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only (see *PCT Applicant's Guide*, Volume I/A, Annexes B1 and B2).

The attention of the applicant is drawn to the fact that amendments to the claims under Article 19 are not allowed where the International Searching Authority has declared, under Article 17(2), that no international search report would be established (see *PCT Applicant's Guide*, Volume I/A, paragraph 296).

#### What parts of the international application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

#### When?

Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

#### Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

#### How?

Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Section 205(b)).

**The amendments must be made in the language in which the international application is to be published.**

#### What documents must/may accompany the amendments?

##### **Letter (Section 205(b)):**

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

**The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.**

## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 186666/PCT	<b>FOR FURTHER ACTION</b> see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. PCT/US2006/031275	International filing date (day/month/year) 09/08/2006	(Earliest) Priority Date (day/month/year) 09/08/2005
Applicant  THE GENERAL HOSPITAL CORPORATION		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 7 sheets.



It is also accompanied by a copy of each prior art document cited in this report.

## 1. Basis of the report

a. With regard to the **language**, the international search was carried out on the basis of:



the international application in the language in which it was filed



a translation of the international application into \_\_\_\_\_, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b))

b. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐ **Certain claims were found unsearchable** (See Box No. II)

3. ☐ **Unity of invention is lacking** (see Box No III)

4. With regard to the **title**,



the text is approved as submitted by the applicant



the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,



the text is approved as submitted by the applicant



the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority

6. With regard to the **drawings**,

a. the figure of the **drawings** to be published with the abstract is Figure No. 8



as suggested by the applicant



as selected by this Authority, because the applicant failed to suggest a figure



as selected by this Authority, because this figure better characterizes the invention

b. ☐ none of the figures is to be published with the abstract

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2006/031275

## Box No. IV Text of the abstract (Continuation of item 5 of the first sheet)

Apparatus, method and storage medium which can provide at least one first electro-magnetic radiation to a sample 130 and at least one second electro-magnetic radiation to a reference, such that the first and/or second electro-magnetic radiations have a spectrum which changes over time. In addition, a first polarization component of at least one third radiation 405 associated with the first radiation can be combined with a second polarization component of at least one fourth radiation 400 associated with the second radiation with one another. The first and second polarizations may be specifically controlled to be at least approximately orthogonal to one another. Apparatus and method are used for quadrature detection of swept source Fourier domain optical coherence tomography.

**A. CLASSIFICATION OF SUBJECT MATTER**

INV. G01B9/02 G01N21/47

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

G01B G01N A61B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, IBM-TDB, COMPENDEX, INSPEC

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JUN ZHANG, WOONGGYU JUNG, J. STUART NELSON, ZHONGPING CHEN: "Full range polarization-sensitive Fourier domain optical coherence tomography" OPTICS EXPRESS, vol. 12, no. 24, 29 November 2004 (2004-11-29), pages 6033-6039, XP002415697 abstract page 6034, paragraph 2 - page 6037, last paragraph; figures 1,2	1-10, 12-23, 25,26
X	US 6 020 963 A (DIMARZIO CHARLES A [US]) 1 February 2000 (2000-02-01) column 2, line 60 - column 4, line 21; figures 2,2A,2B	1-10, 12-14



Further documents are listed in the continuation of Box C.



See patent family annex.

\* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

19 January 2007

Date of mailing of the international search report

05/02/2007

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Petelski, Torsten

## C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>YONGHUA ZHAO, ZHONGPING CHEN, ZHIHUA DING, HONGWU REN, J. STUART NELSON: "Real-time phase-resolved functional optical coherence tomography by use of optical Hilbert transformation"</p> <p>OPTICS LETTERS, vol. 27, no. 2, 15 January 2002 (2002-01-15), pages 98-100, XP002415698 abstract page 98, left-hand column, paragraph 1 - page 99, right-hand column, paragraph 2; figure 1</p>	1-10, 12-14
X	<p>-----</p> <p>SIAVASH YAZDANFAR, JOSEPH A. IZATT: "Self-referenced Doppler optical coherence tomography"</p> <p>OPTICS LETTERS, vol. 27, no. 23, 1 December 2002 (2002-12-01), pages 2085-2087, XP002415699 page 2085, left-hand column, paragraph 1 - page 2086, left-hand column, paragraph 3; figure 1</p>	1-10, 12-14
A	<p>-----</p> <p>US 2004/239943 A1 (IZATT JOSEPH A [US] ET AL) 2 December 2004 (2004-12-02) ✓</p> <p>paragraph [0006] - paragraph [0021]</p> <p>-----</p>	1-10, 12-23, 25,26

## FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.2

Claims Nos.: 11,24,27,28

Independent claims 27 and 28 contain storage media with software to perform a method of interferometry with the method steps of claims 15 and 26. However, all those method steps like e.g. providing light or combining light are performed by optical arrangements like beamsplitters, detectors or waveplates without the interaction of software. The role and the characteristics of the software are therefore unclear to an extent that no meaningful search can be carried out on claims 27 and 28 (Article 17(2)(a) PCT). Furthermore, it is also unclear, what is meant by "positive" and "negative sections" of a (phase) delay in claims 11 and 24 and therefore also here, no meaningful search is possible.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.5), should the problems which led to the Article 17(2) declaration be overcome.

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US2006/031275

## Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☒ Claims Nos.: 11, 24, 27, 28  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:  
see FURTHER INFORMATION sheet PCT/ISA/210
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

### Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.



# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2006/031275

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6020963	A	01-02-2000	NONE
US 2004239943	A1	02-12-2004	NONE

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

# PCT

To:

see form PCT/ISA/220

## WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing  
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference  
see form PCT/ISA/220

**FOR FURTHER ACTION**  
See paragraph 2 below

International application No.  
PCT/US2006/031275

International filing date (day/month/year)  
09.08.2006

Priority date (day/month/year)  
09.08.2005

International Patent Classification (IPC) or both national classification and IPC  
INV. G01B9/02 G01N21/47

Applicant  
THE GENERAL HOSPITAL CORPORATION

### 1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☒ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

### 2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

### 3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



European Patent Office  
D-80298 Munich  
Tel. +49 89 2399 - 0 Tx: 523656 epmu d  
Fax: +49 89 2399 - 4465

Date of completion of  
this opinion

see form  
PCT/ISA/210

Authorized Officer

Petelski, Torsten

Telephone No. +49 89 2399-2441



**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/US2006/031275

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**Box No. I Basis of the opinion**

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1. With regard to the **language**, this opinion has been established on the basis of:
  - ☒ the international application in the language in which it was filed
  - ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1 (b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material:
    - ☐ a sequence listing
    - ☐ table(s) related to the sequence listing
  - b. format of material:
    - ☐ on paper
    - ☐ in electronic form
  - c. time of filing/furnishing:
    - ☐ contained in the international application as filed.
    - ☐ filed together with the international application in electronic form.
    - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/US2006/031275

**Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of

☐ the entire international application

☒ claims Nos. 11,24,27,28

because:

☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international search (*specify*):

☒ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. 11,24,27,28 are so unclear that no meaningful opinion could be formed (*specify*):

**see separate sheet**

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed (*specify*):

☐ no international search report has been established for the whole application or for said claims Nos.

☐ a meaningful opinion could not be formed without the sequence listing; the applicant did not, within the prescribed time limit:

☐ furnish a sequence listing on paper complying with the standard provided for in Annex C of the Administrative Instructions, and such listing was not available to the International Searching Authority in a form and manner acceptable to it.

☐ furnish a sequence listing in electronic form complying with the standard provided for in Annex C of the Administrative Instructions, and such listing was not available to the International Searching Authority in a form and manner acceptable to it.

☐ pay the required late furnishing fee for the furnishing of a sequence listing in response to an invitation under Rules 13*ter*.1(a) or (b).

☐ a meaningful opinion could not be formed without the tables related to the sequence listings; the applicant did not, within the prescribed time limit, furnish such tables in electronic form complying with the technical requirements provided for in Annex C-*bis* of the Administrative Instructions, and such tables were not available to the International Searching Authority in a form and manner acceptable to it.

☐ the tables related to the nucleotide and/or amino acid sequence listing, if in electronic form only, do not comply with the technical requirements provided for in Annex C-*bis* of the Administrative Instructions.

☐ See Supplemental Box for further details

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/US2006/031275

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**Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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1. Statement

Novelty (N)	Yes: Claims	14,19
	No: Claims	1-10,12,13,15-18,20-23,25,26
Inventive step (IS)	Yes: Claims	
	No: Claims	1-10,12-23,25,26
Industrial applicability (IA)	Yes: Claims	1-10,12-23,25,26
	No: Claims	

2. Citations and explanations

**see separate sheet**

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**Box No. VIII Certain observations on the international application**

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The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

**see separate sheet**

**Reference** is made to the following documents:

- D1:** XP002415697; Jun Zhang et al.: "Full range polarization-sensitive Fourier domain optical coherence tomography"
- D2:** US-A-6 020 963
- D3:** XP002415698; Yonghua Zhao et al.: "Real-time phase-resolved functional optical coherence tomography by use of optical Hilbert transformation"
- D4:** XP002415699; Siavash Yazdanfar, Joseph Izatt: "Self-referenced Doppler optical coherence tomography"

**Re Item III.**

**1. No opinion**

- (i) **Claims 27 and 28** contain storage media with software to perform a method of interferometry according to the method steps of **claims 15 and 26**. However, all those method steps like, e.g. providing light or combining light, are performed by optical arrangements like beamsplitters, detectors or waveplates without the interaction of software. It is unclear, how software should perform said method steps and therefore no opinion on novelty or inventive step can be given for **claims 27 and 28**.
- (ii) It is unclear, what is meant by "positive" and "negative sections" of a (phase) delay in **claims 11 and 24**. This renders the claims so unclear that no opinion on novelty or inventive step can be given.

**Re Item V.**

**2. Novelty**

The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of the following claims is not new in the sense of Article 33(2) PCT.

## 2.1 Independent claim 1

**Claim 1** is formulated in such a broad manner that even a single polarizing beamsplitter would be novelty destroying. When placed in an interferometer behind whatever radiation source (also with changing spectrum), a beamsplitter (representing the first and second arrangement) is capable of providing polarized radiation to a sample and a reference and is at the same time capable of combining the orthogonally polarized radiation that is reflected back to the beamsplitter from the sample and the reference.

In particular, documents **D1**, **D2**, **D3** and **D4** disclose all features of **claim 1** (**D1**: p.6034, second paragraph - p.6037, second paragraph; fig.1,2; **D2**: col.2, l.60 - col.4, l.21; fig.2A,2B; **D3**: p.99, left-hand col., top - right-hand col., 2nd par.; fig.1; **D4**: p.2085, left-hand col., 3rd par. - p.2086, left-hand col., 1st par.; fig.1), because they disclose a first beamsplitter (**D1**: 2x2 coupler; **D2**: 30; **D3**: BS; **D4**: "50/50") that provides radiation to a sample (**D1**: "sample"; **D2**: target 90; **D3**: "sample"; **D4**: "sample") and a reference (**D1**: "mirror"; **D2**: mirror in "RSOD"; **D3**: 1110; **D4**: "reference") and a second beamsplitter (in **D1**, **D3** and **D4** identical with the first beamsplitter; in **D2**: 60) that combines the reflected or transmitted beams. In all documents, sample and reference beams contain two orthogonal polarization-components, which are both combined by the splitter. Furthermore, the spectrum of first and second radiation in **D1** changes over time (swept-source).

## 2.2 Independent claim 13

In addition to the first arrangement (see item 1.1), **D1**, **D2**, **D3** and **D4** disclose at least two second arrangements (**D1**: detectors D1 and D2; **D2**: detectors 75,75',76,76'; **D3**: detectors of port D and E; **D4**: detectors D1 and D2), which are capable of generating interference signals of whatever radiation is projected on it. In addition, said documents disclose a third birefringent arrangement (**D1**: phase modulator in reference path; **D2**: waveplate 120; **D3**: waveplate QWP; **D4**: Wollaston prism), capable of controlling a phase difference of the interference signals on the at least two detectors.

### 2.3 Independent claim 15

According to item 2.1, **D1** discloses all features of **claim 15**.

### 2.4 Independent claim 26

**D1** discloses the use of an OCT-apparatus (p.6034, 2nd par. - p.6037, last par.; fig.1,2) comprising the steps of:  
providing one first radiation to a sample and a second radiation to a reference (fig.1), wherein the spectrum of both radiations changes over time (swept source);  
generating a first signal (on detector D1) and a second signal (on D2) different from the first signal (different polarizations are reflected differently by the sample) as functions of first and second interferences between one third radiation (back-reflected from sample) and one fourth radiation (back-reflected from reference mirror) and with an electro-optic phase modulator (electrically induced birefringence) specifically controlling, as a function of birefringence, a difference in phases of first and second interferences (the phase difference between sample and reference arm is changed or controlled by the phase modulator) to exclude  $n\pi$  (at certain times, the polarization modulator creates circular polarization, and for equal length of reference and sample paths the interference signals will be out of phase by approximately  $\pi/2$ , knowing the implicit condition that the phase modulation depth is not bigger than  $\pi/2$ ).

### 2.5 Dependent claims

The features that are added by the dependent **claims 2, 4-9, 10, 12, 16-18, 20-23 and 25** are known from at least **D1**:

**claim 2**: third arrangement is a detector

**claim 4 and 18**: the detector modifies the radiation-signal into an electric signal as a function of predetermined efficiency data (A/mW)

**claim 5**: the efficiency data is based on a characteristic like the material of the detector,

**claim 6**: the detector is capable of sequentially obtaining a plurality of signals, determining statistical characteristics of the signals like average light intensity over



response time such that the predetermined efficiency data is derived, should the light intensity be known

**claims 7, 8, 9, 20, 21 and 22:** these claims define phase differences that depend on the characteristics of the sample and do therefore not limit the apparatus or method any further

**claim 10 and 23:** there is a phase delay between reference and sample arm and the topographic image is calculated by a computer as function of the delay and the signals of both detectors

**claim 12 and 25:** the sign and magnitude of the phase delay is measured and reconstructed by a computer

**claim 16 and 17:** both detectors detect interference signals between the polarization components of both beams

### 3. Inventive step

Dependent **claims 14 and 19** do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of inventive step (Article 33(1) and (3) PCT), since they are merely minor modifications of the apparatuses that are disclosed in the prior art documents and which a skilled person would consider without the exercise of inventive skill, especially as the advantages thus achieved can readily be foreseen.

### Re Item VIII.

### 4. Conciseness

Although the dependent apparatus **claims 1 and 13** and the respective method **claims 15 and 26** have been drafted as separate independent claims, they relate effectively to the same subject-matter and differ from each other only with regard to the definition of the subject-matter for which protection is sought. The aforementioned claims therefore lack conciseness and as such do not meet the requirements of Article 6 PCT.

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